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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,742	03/04/2002	Yasushi Sugaya	614.1747CD2C	3699

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EXAMINER

HUGHES, DEANDRA M

ART UNIT PAPER NUMBER

3663

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/086,742	SUGAYA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Deandra M. Hughes	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1)  Responsive to communication(s) filed on 07 October 2005.
- 2a)  This action is **FINAL**.                      2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4)  Claim(s) 1-4 and 8-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5)  Claim(s) \_\_\_\_\_ is/are allowed.
- 6)  Claim(s) 1-4 and 8-30 is/are rejected.
- 7)  Claim(s) \_\_\_\_\_ is/are objected to.
- 8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a)  All    b)  Some \* c)  None of:
1.  Certified copies of the priority documents have been received.
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments filed 10/6/05 have been fully considered but they are not persuasive.

Applicant argues the following:

- (A) "DiGiovanni does not disclose or suggest any manner of obtaining substantially equal gain with respect to wavelengths independently of variation of the received WDM optical signal level, as recited, for example, in claim 1." (pg. 9, last two lines).
- (B) "DiGiovanni does not disclose or suggest any manner of obtaining substantially equal gain, over wavelengths and time, as recited, for example in claim 3." (pg. 10, lines 20-22).

Argument (A) is not convincing because DiGiovanni discloses the net gain adjustment while attempting to equalize the amplifier gain is:

$$dG(\lambda_{s2}) = dG(\lambda_{s1})\delta E(\lambda_{s1}, \lambda_{s2}) \quad (\text{col. 4, line 50})$$

As can be seen above, the gain adjustment is independent of variation of the received WDM signal level.

Argument (B) is not convincing because the gain adjustment would inherently occur in given time span. All communication systems have inherent response times.

***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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3. Claims 1-4 and 8-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni (US 5,050,949 published Sept. 24, 1991) in view of Naito (US 5,568,310 filed May 4, 1995).

With regard to claims 1, 3-4, 8, 10-12, 14-16, 18-19, DiGiovanni discloses a multi-stage optical amplifier (fig. 1; EDFAs #16 and #26) for amplifying received WDM signals (IN) with substantially equal gain (fig. 4) with respect to the wavelengths of the plurality of optical signals (1540.5nm and 1538nm) and for outputting the amplified WDM signal. The multistage amplifier includes a first stage (#16) and a second stage (#26) with a level controller (#36; col. 4, line 64) situated between them for controlling the power level of the WDM signal amplified in the 1<sup>st</sup> stage.

However, DiGiovanni does not specifically disclose a transmitter and receiver. This is well known in the art. Further, it is taught by Naito (TX and RX). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to use the multistage optical amplifier in a transmission system for the advantage of compensating for power loss during transmission.

With regard to claims 2, 9, 13, 17, DiGiovanni discloses:

- a first optical transmission line (line through which signals travel) through which a WDM optical signal including a plurality of optical signals with different wavelengths are transmitted (1540.5nm and 1538nm)
- a multi-stage optical amplifier (#16 and #26) to amplify the WDM optical signal with substantially equal gain (fig. 4) over the wavelengths of the optical signals; and

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- a second optical transmission line (second arrow on the extreme right of fig. 1) through which the amplified WDM optical signals is transmitted, wherein the multi-stage optical amplifier includes:
  - o a front stage optical amplifier (#16) which amplifies the WDM optical signal to produce a front-stage amplified WDM optical signal;
  - o a level controller (#36; col. 4, line 64) which controls a power level of the front-stage amplified WDM optical signal and outputs a controlled WDM optical signal (#36 is situated between the two stages); and
  - o a rear-stage optical amplifier (#26) which amplifies the controlled WDM optical signal to produce a rear-stage amplified WDM optical signal.

However, DiGiovanni does not specifically disclose a transmitter and receiver. This is well known in the art. Further, it is taught by Naito (TX and RX). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to use the multistage optical amplifier in a transmission system for the advantage of compensating for power loss during transmission.

With regard to claims 20-30, DiGiovanni discloses receiving an input at the 1<sup>st</sup> amplifier stage (fig. 1, IN) and outputting a signal at the 2<sup>nd</sup> amplifier stage (fig. 1, OUT).

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. Claims 3-4, 10-11, 13-14, 17-18, 21-22, 25-26, and 28-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The added material which is not supported by the original disclosure is as follows.

Claims 3-4 and 13-14 claim "...with substantially equal gain, over the wavelengths of the optical signals and time..." (lines 6 and 3, respectively; emphasis mine). In pg. 10 of the Remarks filed 10/6/05, applicant points to pg. 2, lines 16-20; fig. 1, pg. 11, lines 29-34, and pg. 12, lines 17-19 to support this amendment. However, the cited sections do not support the amendment. Further, the Examiner has not been able to identify a single occurrence of the word 'time' in applicant's specification.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M. Hughes whose telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

  
Deandra M Hughes  
Examiner  
Art Unit 3663